Editors

C O Hunt Liverpool John Moores University, Liverpool, UK

R.G. Klein Stanford University, Stanford, CA, USA Th. Rehren UCL Qatar, Education City, Doha, Qatar R. Torrence Australian Museum, Sydney, NSW, Australia

Associate Editors

E. Asouti University of Liverpool, Liverpool, UK

K. Brown University of Manchester, Manchester, England, UK

M. Canti English Heritage, Portsmouth, UK

I Fassbinder Bavarian State Dept. of Monuments & Sites, Munchen, Germany Cultural Heritage Agency of the Netherlands, Amersfoort, Netherlands H. Huisman The State University of New York at Buffalo, Buffalo, New York, USA S. I. Lycett

Dr. Marcos Martinón-Torres Senior Lecturer in Archaeological Science and Material Culture Institute of Archaeology University

College London, 31-34 Gordon Square London WC1H 0PY, UK. email: m.martinon-torres@ucl.ac.uk

D.R. Piperno Smithsonian National Museum of Natural History, Washington, WA, USA

J. Sealy University of Cape Town, Rondebosch, South Africa

I. Whitbread University of Leicester, Leicester, UK

Editorial Board

University College London, Institute of Archaeology, London, UK University of Wales, Lampeter, UK M. Charlton

R. Coard P. Degryse K. Edwards KU Leuven, Leuven, Belgium University of Aberdeen, Aberdeen, UK R.P. Evershed University of Bristol, Bristol, UK I. Freestone Y. Goren University College London (UCL), London, UK Tel Aviv University, Tel Aviv, Israel D.K. Grayson E.M. Hedges C. Heron University of Washington, Seattle, WA, USA University of Oxford, Oxford, UK University of Bradford, Bradford, UK

University of Birmingham, Birmingham, England, UK University of Sheffield, Sheffield, UK University of Arizona, Tucson, AZ, USA A. Howard

G. Jones D. Killick

Massachusetts Institute of Technology (MIT), Cambridge, MA, USA Christian-Albrechts-Universität zu Kiel (CAU), Kiel, Germany Beijing University of Science and Technology, Beijing, China The University of Utah, Salt Lake City, UT, USA University of Missouri, Columbia, MO, USA University of Oxford, Oxford, UK H. Lechtman C. Makarewicz I. Mei

O'Connell D. Pearsall M. Pollard B. Pyatt M. Regert C. Roberts Nottingham Trent University, Nottingham, UK Universite de Nice-Sophia Antipolis Nice, France Durham University, Durham, UK Schwarcz

McMaster University, Hamilton, ON, Canada Georgia State University, Atlanta, GA, USA B. Turner

Publication information: Journal of Archaeological Science (ISSN 0305-4403). For 2014, volumes (41-52) (12 issues) is scheduled for publication. Subscription prices are available upon request from the Publisher or from the Elsevier Customer Service Department nearest you or from this journal's website (http://www.elsevier.com/locate/jas). Further information is available on this journal and other Elsevier products through Elsevier's website: (http://www.elsevier.com). Subscriptions are accepted on a prepaid basis only and are entered on a calendar year basis. Issues are sent by standard mail (surface within Europe, air delivery outside Europe). Priority rates are available upon request.

Claims for missing issues should be made within six months of the date of dispatch.

USA mailing notice: Journal of Archaeological Science (ISSN 0305-4403) is published monthly by Elsevier Ltd. (The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK). Periodicals postage paid at Jamaica, NY 11431 and additional mailing offices.

USA POSTMASTER: Send change of address to Journal of Archaeological Science, Elsevier Customer Service Department, 3251 Riverport Lane, Maryland Heights, MO 63043 USA

AIRFREIGHT AND MAILING in USA by Air Business Ltd., c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA.

Printed by Henry Ling Ltd, The Dorset Press, Dorchester, UK.

© 2014 Elsevier Ltd. This journal and the individual contributions contained in it are protected under copyright, and the following terms and conditions apply to their use in addition to the terms of any Creative Commons or other user license that has been applied by the publisher to an individual article: Photocopying: Single photocopies of single articles may be made for personal use as allowed by national copyright laws. Permission is not required for photocopying of articles published under the CC BY license nor for photocopying for non-commercial purposes in accordance with any other user license applied by the publisher. Permission of the publisher and payment of a fee is required for all other photocopying, including multiple or systematic copying, copying for advertising or promotional purposes, resale, and all forms of document delivery. Special rates are available for educational institutions that wish to make photocopies for non-profit educational classroom use. **Derivative Works**: Users may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions or companies. Other than for articles published under the CC BY license, of contents or prepare lists of articles including abstracts for internal circulation within their institutions or companies. Other than for articles published under an ECC BY-INCEND for on the publisher is required for resale or distribution outside the subscribing institution or company. For any subscribed articles or articles published under a CC BY-INCEND license, permission of the publisher is required for all other derivative works, including compilations and translations. Storage or Usage: Except as outlined above or as set out in the relevant user license, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the publisher. Notice: No responsibility is assumed by the publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made.

Although all advertising material is expected to conform to ethical (medical) standards inclusion in this publication does not constitute a quarantee or endorsement of the Although all advertising material is expected to conform to ethical (medical) standards, inclusion in this publication does not constitute a guarantee or endorsement of the quality or value of such product or of the claims made of it by its manufacturer.

À special Journal of Archaeological Science subscription rate is available for members of the Society for Archaeological Sciences (SAS). For further information, please contact the Office of the General Secretary, SAS, Department of Geosciences, Franklin & Marshall College, Lancaster, Pennsylvania 17604-3003, USA; Web site: www.socarchsci.org.

For information on how to seek permission visit "http://www.elsevier.com/permissions" www.elsevier.com/permissions or call: (+44) 1865 843830 (UK) / (+1) 215 239 3804 (USA).

Author rights

Author(s) may have additional rights in their articles as set out in their agreement with the publisher (more information at http://www.elsevier.com/authorsrights).

For inquiries relating to the submission of articles (including electronic submission) please visit this journal's homepage at http://www.elsevier.com/locate/jas. For detailed instructions on the preparation of electronic artwork, please visit http://www.elsevier.com/artworkinstructions. Contact details for questions arising after acceptance of an article, especially those relating to proofs, will be provided by the publisher. You can track accepted articles at http://www.elsevier.com/trackarticle. You can also check our Author FAQs at http://www.elsevier.com/authorFAQ and/or contact Customer Support via http://support.elsevier.com.

Orders, claims, and journal inquiries: please contact the Elsevier Customer Service Department nearest you

St. Louis: Elsevier Customer Service Department, 3251 Riverport Lane, Maryland Heights, MO 63043, USA; phone: (877) 8397126 [toll free within the USA]; (+1) (314)

4478878 [outside the USA]; fax: (+1) (314) 4478077; e-mail: JournalCustomerService-usa@elsevier.com

Oxford: Elsevier Customer Service Department, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK; phone: (+44) (1865) 843434; fax: (+44) (1865) 843970;

Tokyo: Elsevier Customer Service Department, 4F Higashi-Azabu, 1-Chome Bldg, 1-9-15 Higashi-Azabu, Minato-ku, Tokyo 106-0044, Japan; phone: (+81) (3) 5561 5037; fax: (+81) (3) 5561 5047; e-mail: JournalsCustomerServiceJapan@elsevier.com

Singapore: Elsevier Customer Service Department, 3 Killiney Road, #08-01 Winsland House I, Singapore 239519; phone: (+65) 63490222; fax: (+65) 67331510; e-mail: Journals-Customer-Service-APAC@elsevier.com

Advertising information: If you are interested in advertising or other commercial opportunities please e-mail Commercialsales@elsevier.com and your inquiry will be passed to the correct person who will respond to you within 48 hours

∅ The paper used in this publication meets the requirements of ANSI/NISO Z39.48-1992 (Permanence of Paper)

Funding body agreements and policies

Elsevier has established agreements and developed policies to allow authors whose articles appear in journals published by Elsevier, to comply with potential manuscript archiving requirements as specified as conditions of their grant awards. To learn more about existing agreements and policies please visit http://www.elsevier.com/fundingbodies